

## CLAIMS

We claim:

*Sub C1*  
1. > An apparatus for automatically reprocessing a specimen from an infiltrating medium to an aqueous fluid comprising in combination:

a processing chamber for holding a specimen;

means for regulating flow of fluid to the processing chamber;

at least one container of a clearant agent, at least one container of a dehydrant agent and at least one container of an aqueous fluid, *water or saline* the containers of clearant, dehydrant and aqueous fluid being connected to the processing chamber via means for regulating flow of fluid to the processing chamber; and

a control device having a processor and a memory device, the processor controlling the means for regulating flow of fluid in order to automatically and sequentially connect the processing chamber with the container of clearant agent, the container of dehydrant agent and the container of aqueous solution in order to reprocess the specimen.

*Sub D3*  
2. > The apparatus of claim 1 wherein means for regulating flow of fluid includes a rotary valve and wherein the processor selects the containers of clearant, dehydrant or aqueous fluid by setting the rotary valve.

3. The apparatus of claim 1 further comprising:  
at least one container of an infiltrating medium being connected to the processing chamber by a second valve and wherein the processor controls the second valve.

4. The apparatus of claim 3 wherein the processor further controls the means for regulating flow of fluid and the second valve in order to automatically and sequentially, after the connection to the container of aqueous fluid, connect the processing chamber with the container of dehydrant agent, the container of clearant and the container of infiltrating medium in order to process the specimen.

5. The apparatus of claim 1 further comprising a container of purge dehydrant being connected to the processing chamber by the means for regulating flow of fluid, the processor controlling the means for regulating flow of fluid in order to automatically and sequentially connect the processing chamber with the container of clearant agent, the container of purge dehydrant, the container of dehydrant agent and the container of aqueous solution in order to reprocess the specimen.

6. The apparatus of claim 5 further comprising a container of purge clearant being connected to the processing chamber by the means for regulating flow of fluid, the processor controlling the means for regulating flow of fluid in order to automatically and sequentially connect the processing chamber with the container of purge clearant, the container of clearant agent, the container of purge dehydrant, the container of dehydrant agent and the container of aqueous solution in order to reprocess the specimen.

7. A computer readable storage medium containing a set of instructions for a general purpose computer having a user interface comprising means for input, an output driver for

connections to at least one valve, the valve being connected to at least one container of a clearant agent, at least one container of a dehydrant agent and at least one container of an aqueous fluid, the set of instructions comprising:

an initiating routine operatively associated with said user interface for permitting a user to initiate reprocessing via the means for input, said means for input being associated with a reprocessing program accessible to said computer;

a run routine for implementing said reprocessing program selected by the user, the reprocessing program controlling the output drive to the valve in order to automatically and sequentially connect the valve to the container of clearant agent, the container of dehydrant agent and the container of aqueous solution for reprocessing of a specimen.

8. The computer readable storage medium of claim 7 wherein the valve is connected to a container of purge dehydrant and wherein

the reprocessing program automatically and sequentially connects the valve to the container of purge dehydrant after connection of the valve to the container of clearant agent.

9. The computer readable storage medium of claim 8 wherein the valve is connected to a container of purge clearant and wherein

the reprocessing program automatically and sequentially connects the valve to the container of purge clearant before connection of the valve to the container of clearant agent.

10. Method for automatically reprocessing a specimen using a specimen reprocessing machine having processor for controlling the exposure of the specimen to a clearing agent, a

dehydrating agent and an aqueous fluid, the method comprising the steps of:

providing the specimen which is infiltrated with an infiltrating medium;  
indicating to the specimen reprocessing machine that the specimen is to be reprocessed;  
exposing the specimen to a clearing agent via the processor to remove the infiltrating medium from the specimen; thereafter  
exposing the specimen to a dehydrating agent via the processor to remove the clearing agent; and thereafter  
exposing the specimen to an aqueous fluid via the processor to remove the dehydrating agent from the specimen.

11. The method of claim 10 wherein the processor further controls the exposure of the specimen to an infiltrating medium and further comprising the steps of:

exposing the specimen to a dehydrating agent via the processor after exposing the specimen to an aqueous fluid;

exposing the specimen to a clearing agent to remove the dehydrating agent; and  
exposing the specimen to an infiltrating medium to replace the clearing agent.

12. The method of claim 10 wherein the clearing agent is xylene.

13. The method of claim 10 wherein the dehydrating agent is alcohol.

14. The method of claim 10 wherein the aqueous fluid is formalin.

15. A computer-readable storage medium containing a set of instructions for a general purpose computer, said set of instructions implementing the procedure shown in Figure 6a.

16. Method for reprocessing a specimen which is infiltrated with an infiltrating medium using a specimen reprocessing system having a processing chamber, the method comprising the steps of:

subjecting the specimen to at least one exposure to a clearant;

subjecting the tissue sample to at least one exposure to a purge dehydrant after the exposure to the clearant, the purge dehydrant being contaminated with clearant and being used to clean the processing chamber of the clearant;

subjecting the specimen to at least one exposure to a dehydrant after the exposure to the purge dehydrant; and

subjecting the specimen to an aqueous fluid.

17. The method of claim 16 further comprising the steps of:

subjecting the specimen to at least one exposure to paraffin; and thereafter

subjecting the specimen to at least one exposure to a purge clearant after the exposure to the bath of paraffin, the purge clearant being contaminated with clearant and being used to clean the processing chamber of paraffin.

18. The method of claim 17 further comprising the steps of:

subjecting the specimen to the dehydrant after subjecting the specimen to an aqueous fluid;

subjecting the specimen to the clearant to remove the dehydrant; and  
subjecting the specimen to an infiltrating medium to replace the clearant.

19. Method for reprocessing a specimen which is infiltrated with an infiltrating medium using a specimen reprocessing system having a processing chamber, the method comprising the steps of:

inputting a final step in reprocessing the specimen;  
subjecting the specimen to at least one exposure to a clearant;  
determining whether the step of subjecting the specimen to at least one exposure of clearant is the final step in reprocessing the specimen;  
subjecting the specimen to at least one exposure to a dehydrant if the step of subjecting the specimen to at least one exposure of clearant is not the final step in reprocessing the specimen;  
determining whether the step of subjecting the specimen to at least one exposure of dehydrant is the final step in reprocessing the specimen; and  
subjecting the specimen to an aqueous fluid if the step of subjecting the specimen to at least one exposure of dehydrant is not the final step in reprocessing the specimen.

20. The method of claim 19 further comprising the step of  
subjecting the specimen to an infiltrating medium to replace the clearant, after the step of determining whether the step of subjecting the specimen to at least one exposure of clearant is the final step, if the step of subjecting the specimen to at least one exposure of clearant is the final step in reprocessing the specimen.

21. The method of claim 19 further comprising the steps of:

subjecting the specimen to the clearant to remove the dehydrant, after the step of determining whether the step of subjecting the specimen to at least one exposure of dehydrant is the final step, if the step of subjecting the specimen to at least one exposure of dehydrant is the final step in reprocessing the specimen; and

subjecting the specimen to an infiltrating medium to replace the clearant.

22. The method of claim 19 further comprising the steps of:

subjecting the specimen to the dehydrant after subjecting the specimen to an aqueous fluid;

subjecting the specimen to the clearant to remove the dehydrant; and

subjecting the specimen to an infiltrating medium to replace the clearant.